



New thermochronological constraints for the exhumation of the Aiguilles Rouges massif, Western Alps

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During Oligo-Miocene times, the proximal part of the European passive margin underwent collisional shortening. In the outermost part of the Alpine arc, this shortening occurred in the fold-and-thrust belts (Bornes, Bauges, Chartreuse and Vercors massifs) with no significant tectonic burial. In the External Crystalline Massifs (ECM: Mont Blanc, Aiguilles Rouges, Belledonne, Oisans massifs) the crust was buried at mid-crustal depths below the internal units at 35 to 30 Ma.

Along the ECORS profile, the timing of the Mont Blanc massif deformation and exhumation is now well constrained. However, the exhumation of the Aiguilles Rouges massif is much less constrained and this led to various and contrasting interpretations in terms of structural style and sequence of shortening.

In this contribution, we present a new thermochronological dataset of the southern part of the Aiguilles Rouges massif. (U-Th-Sm)/He ages on zircons were obtained on three different elevation profiles. Preliminary results indicate ages around 7-8 Ma, which are consistent with Apatite Fission Track data. Those results will allow us to better constrain the timing of the Aiguilles Rouges massifs exhumation relative to the Mont Blanc massif and decipher whether these massifs are deformed in the forward sequence or not, if there were some out-of-sequence major shear zones/thrusts, or if these massifs were deformed sub-coevally. This has major implications in terms of both Alpine collisional wedge kinematics and crustal rheology of the European margin during the Tertiary collision.